

REMARKS/ARGUMENTS

The amendments and remarks hereto attend to all outstanding issues in the pending office action of 25 August 2004. Due to amendments herein, claims 1-18, 20-26, 31-34 remain pending in this application, of which claims 1, 20, 24 and 31 are independent. Claims 20, 23 and 31 are amended. Claims 35-41 are new.

Pursuant to the requirement of restriction, claims 19, 27-30 are withdrawn and may be later filed within divisional applications.

The Examiner's approval of the drawings filed on 31 March 2004 is noted.

IN THE CLAIMS

Claim 20 is amended to clarify that an imaging system is for reducing reflections from a detector. The amendment of claim 21 finds support at paragraph [00109] of the specification as filed.

Claim 23 is amended to correct an error in antecedence in the application as filed.

Claim 31 is amended to correct a typographical error in the application as filed.

New claims 35-41 find support at paragraphs [00109], [00110] of the specification as filed, and in FIG. 21A as filed.

No new matter is added to the application through any of the claim amendments.

Substantive Rejections under 35 U.S.C. §102

Claims 15 and 31 stand rejected as anticipated under 35 U.S.C. §102 by U.S. Patent No. 5,221,834 ("Lisson"). Applicants respectfully disagree. To anticipate a claim, the reference must teach every element of the claim and "the identical invention must be shown in as complete detail as is contained in the ... claim." *MPEP 2131* citing *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987) and *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989).

Applicants' claim 15 requires the following elements:

- (a) optics, including a wavefront coding mask,
 - (i) for imaging a wavefront of the imaging system to an intermediate image and
 - (ii) for modifying phase of the wavefront
 - (iii) such that an optical transfer function of the optical imaging system is substantially invariant to the focus-related aberrations induced, over time, by the intervening medium; and
- (b) a detector for detecting the intermediate image.

Applicants respectfully point out that none of elements (a)(i), (a)(ii), (a)(iii) or (b) of claim 15 are present in Lisson.

With respect to element (a)(i), the Examiner contends that Lisson discloses "optics... for imaging a wavefront of the imaging system to an intermediate image (Fig 10, point source image element 50)..." Office action, page 3. Applicants disagree, and point out that the item labeled 50 in Lisson is not an intermediate image but is instead a light source, sometimes characterized by Lisson as a point source. See Lisson, column 12, line 66 and column 13, lines 28-30. Lisson has no disclosure of "imaging a wavefront of the imaging system to an intermediate image" as required by element (a)(i) of claim 15. Lisson in fact has no teaching or suggestion of an intermediate image nor optics that form an intermediate image. The word "intermediate" is not found anywhere in Lisson.

With respect to element (a)(ii), the Examiner contends that Lisson discloses a "wave front coding mask... for modifying (column 5, lines 30-64) phase of the wavefront (column 3, lines 48-57)..." Office action, page 3. Applicants disagree, and point out that neither of the cited passages in Lisson disclose "modifying phase" (in fact, neither of the cited passages uses the word "phase").

With respect to element (a)(iii), the Examiner contends that Lisson discloses "an optical transfer function of the optical (column 3, lines 58-60) imaging system is substantially invariant to the focus-related aberrations induced..." Office action, page 3. Applicants disagree, and point out that these cited passages refer to the computation of an optical transfer function, and do not disclose making such a function "substantially invariant to the focus-related aberrations," as required by

element (a)(iii). In particular, note the following passage of Lisson: “The steps of the novel method comprise... (b) computing a localized optical transfer function (OTF) for the localized wavefront errors transmitted ...” Lisson, column 3, lines 52-60.

With respect to element (b) of claim 15, the Examiner contends that Lisson discloses “a detector for detecting the intermediate image (fig 10, point of source image element 50).” Office action, page 3. Applicants disagree, and point out (1) that the Examiner first characterizes the item labeled 50 in Lisson as “an intermediate image” (discussed above) and then characterizes the same item as “a detector,” and (2) that the item labeled 50 in Lisson is not an intermediate image or a detector, but is a light source (or point source), as noted above.

Applicants thus respectfully contend that claim 15 is not anticipated, since elements of claim 15 are not found - anywhere- in the cited art, let alone “shown in as complete detail as is contained in the ... claim” as required by 35 U.S.C. §102. Applicants request reconsideration and withdrawal of the rejection of claim 15 under 35 U.S.C. §102(b) as anticipated by Lisson.

Applicants’ claim 31, as amended, requires the following elements:

- (a) optics, including a wavefront coding mask, for imaging a wavefront of an object to be recognized to an intermediate image; and
- (b) a detector for detecting the intermediate image, wherein
- (c) a modulation transfer function detected by the detector contains no zeros such that subsequent task based image processing recognizes the object.

Applicants respectfully point out that none of elements (a), (b) or (c) of claim 31 are present in Lisson.

With respect to element (a), the Examiner contends that Lisson discloses “optics, including a wavefront coding mask, for imaging a wavefront of an object to be recognized to an intermediate image (opaque mask generating local wavefront errors, column 3, lines 54-57).” Office action, page 3. Applicants disagree that the cited passage discloses element (a) “in as complete detail as is contained in the ... claim.” The cited passage of Lisson recites, instead, “sampling the imaged beam by an opaque mask defining at least two apertures, for generating local wavefront errors

at a pupil position defined by a location of the mask.” Lisson, column 3, lines 54-57. Clearly, Lisson does not then disclose “optics, including a wavefront coding mask, for imaging a wavefront of an object to be recognized to an intermediate image” as required by element (a). Lisson instead modifies an image (“sampling the imaged beam by an opaque mask”; Id.), whereas Applicants’ claim 31 (e.g., as described in specification paragraph [0061]) includes “optics, including a wavefront coding mask for imaging a wavefront of an object.” Thus, as discussed above with respect to claim 15, Lisson does not disclose an “intermediate image” nor “optics for imaging... to an intermediate image.”

With respect to element (b), the Examiner contends that Lisson discloses “a detector for detecting the intermediate image, (fig 10, point source image, item 50 corresponds to intermediate image).” Office Action, page 4. Applicants respectfully disagree and point out, as discussed above with respect to claim 15, that the item labeled 50 in Lisson is not an intermediate image, but is a light source (or point source), as discussed above with respect to claim 15.

With respect to element (c), the Examiner contends that Lisson discloses “a modulation transfer function detected by the detector contains no zeros such that subsequent task based image processing recognizes the object (column 5, lines 60-64, column 13, lines 23-47).” Applicants disagree and point out that the cited passages do not include any disclosure of “modulation transfer function detected by the detector contains no zeros” or to “subsequent task based image processing recognizes the object.” Furthermore, a careful search of Lisson reveals no reference whatsoever to modulation transfer functions containing zeroes, task based image processing, or any such image processing.

Applicants thus respectfully contend that claim 31 is not anticipated since elements of claim 31 are not found at all in the cited art, let alone “shown in as complete detail as is contained in the ... claim” as required by 35 U.S.C. §102. Applicants request reconsideration and withdrawal of the rejection of claim 31 under 35 U.S.C. §102(b) as anticipated by Lisson.

Claims 20 and 21 stand rejected as anticipated by U.S. Patent No. 5,966,216 (“Galburt”). Applicants respectfully disagree. Applicants’ claim 20 requires, *inter alia*, “reflecting back-scattered radiation to an aperture stop of the imaging system.”

Applicants respectfully point out that “reflecting back-scattered radiation to an aperture stop of the imaging system” is not present in Galburt. The Examiner contends that Galburt discloses “reflecting back-scattered radiation to an aperture stop of the imaging system (column 6, lines 25-42).” Office Action, page 4. Applicants disagree, and point out that the cited passage is silent on “back-scattered radiation” or anything resembling scattered radiation, let alone “reflecting back-scattered radiation to an aperture stop...”

Applicants thus respectfully contend that claim 20 is not anticipated, since elements of claim 20 are not found at all in the cited art, let alone “shown in as complete detail as is contained in the ... claim.” Applicants request reconsideration and withdrawal of the rejection of claim 20 under 35 U.S.C. §102(b) as anticipated by Galburt.

Applicants’ claim 21 depends from claim 20 and benefits from like arguments. Furthermore, claim 21 recites “the tilt optics being positioned at the aperture stop.” The Examiner contends that Galburt discloses “the tilt optics being positioned at the aperture stop (column 6, lines 25-42).” Applicants disagree, and point out that the cited passage makes no mention of tilt optics being positioned at the aperture stop. Galburt lists an aperture stop within this passage as item 63: “...aperture stop 63” Galburt, column 6, line 39. However, inspection of FIG. 4 shows that no elements are “positioned at the aperture stop.” Galburt, FIG. 4. Also, there are no elements in Galburt “for reflecting back-scattered radiation,” as required by claim 20. Since the elements of claim 21 are lacking in Galburt, Applicants request reconsideration and withdrawal of the rejection of claim 21 under 35 U.S.C. §102(b) as anticipated by Galburt.

Claims 24 - 26 stand rejected as anticipated by U.S. Patent No. 5,610,707 (“Duncan”). Applicants respectfully disagree. For example, claim 24 requires, *inter alia*, “post-processing image data of the optical system to remove phase effects induced by the wavefront coding mask, to control one or more of quilting, stuck actuator and piston error.” Applicants respectfully point out that controlling “one or more of quilting, stuck actuator and piston error” is, at least, not present in Duncan. The Examiner contends that Duncan discloses “post-processing image data... to control one or more of quilting, stuck actuator and piston error (column 2, lines 47-

55, column 4, lines 16-52).” Office Action, page 5. Applicants disagree and point out that neither of the cited passages in Duncan discloses controlling any of “quilting, stuck actuator and piston error.” Applicants thus respectfully contend that claim 24 is not anticipated, since elements of claim 24 are not found at all in the cited art, let alone “shown in as complete detail as is contained in the ... claim.” Applicants request reconsideration and withdrawal of the rejection of claim 24 under 35 U.S.C. §102(b) as anticipated by Duncan.

Claims 25 and 26 depend from claim 24 and benefit from like arguments; however, these claims have additional reasons for patentability. For example, claim 26 recites “the step of modifying comprises modifying phase such that no zeros exist in a modulated transfer function in the image data.” The Examiner contends that Duncan discloses “the step of modifying comprises modifying phase such that no zeros exist in a modulated transfer function in the image data (column 4, lines 49-65, column 5, lines 12-27).” Office Action, page 5. Applicants disagree, and point out that neither of the cited passages in Duncan discloses anything about zeroes in a modulated transfer function, much less modifying phase such that no zeroes exist in a modulated transfer function. Since the elements of claims 25 and 26 are lacking in Duncan, Applicants request reconsideration and withdrawal of the rejection of claims 25 and 26 under 35 U.S.C. §102(b) as anticipated by Duncan.

Substantive Rejections under 35 U.S.C. §103(a)

The following is a quotation from the MPEP setting forth the three basic criteria that must be met to establish a *prima facie* case of obviousness.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP §2142, citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claims 1-14 and 16-17 stand rejected under 35 U.S.C. §103(a) as unpatentable over Lisson in view of U.S. Patent No. 6,674,519 ("Mui"). Applicants respectfully disagree. Applicants' claim 1 requires the following elements:

- (a) optics, including a wavefront coding mask, for
 - (i) imaging a wavefront of the imaging system to an intermediate image and for
 - (ii) modifying phase of the wavefront such that
 - (iii) an optical transfer function of the optical imaging system is substantially invariant to the focus-related aberrations induced, over time, by the intervening medium;
- (b) a detector for detecting the intermediate image; and
- (c) a decoder for processing data from the detector to process phase effects induced by the optics to form a final image that is substantially clear of the focus-related aberrations.

Applicants respectfully point out that none of elements (a)(i), (a)(ii), (a)(iii), (b) and (c) of claim 24 are present in Lisson and/or Mui.

With respect to element (a)(i), the Examiner contends that Lisson discloses “optics... for imaging a wavefront of the imaging system to an intermediate image (Fig 10, point source image element 50)” Office Action, pages 6-7. Applicants disagree and point out, as discussed above with respect to claims 15 and 31, that item 50 is a light source or point source; Lisson does not disclose an “intermediate image” or “imaging ... to an intermediate image.” Mui is silent with respect to an “intermediate image.”

With respect to element (a)(ii), the Examiner contends that Lisson discloses that the optics are “for modifying (column 5, lines 30-64) phase of the wavefront (column 3, lines 48-57)” Office Action, page 7. As noted above with respect to claim 15, the passages of Lisson indicated by the Examiner have no reference to “modifying phase” and do not even include the word “phase.” Mui is silent with respect to “modifying phase.”

With respect to element (a)(iii), the Examiner contends that Lisson discloses “such that an optical transfer function (column 3, lines 58-60) of the optical imaging system is substantially invariant to the focus-related aberrations induced, over time, by the intervening medium (column 5, lines 60-64, column 13, lines 23-47).” Office Action, page 7. Applicants disagree and point out, as discussed above with respect to claim 15, that column 3, lines 58-60 of Lisson refers to computing an optical transfer

function, not making such a function “substantially invariant to the focus-related aberrations...” Also, the second and third cited passages of Lisson do not disclose, in any manner, “focus-related aberrations induced, over time, by the intervening medium.” For example consider the following Lisson citation: “The net result of this action of the novel method is to generate a substantially monotonic-type convergence to an acceptable performance, at a given spatial frequency, thus securing a performance tailored local modulation transfer function (LMTF).” Lisson, column 5, lines 60-64. Mui is silent with respect to “an optical transfer function... substantially invariant to... focus-related aberrations.”

With respect to element (b), the Examiner contends that Lisson discloses “A detector (fig 10, element 56) for detecting the intermediate image (fig. 10, point source image element 50).” Office Action, page 7. Applicants disagree and point out, as discussed above, that Lisson identifies no item as an “intermediate image,” therefore Lisson cannot disclose “a detector for detecting the intermediate image.”

With respect to element (c) the Examiner concedes, “Lisson is silent about a decoder for processing data from the detector to process phase effects induced by the optics to form a final image that is substantially clear of the focus-related aberrations.” Office Action, page 7. However, the Examiner contends, “Mui discloses optical phase front measurement unit. The system comprises of: a decoder for processing data from the detector to process phase effects induced by the optics to form a final image that is substantially clear of the focus-related aberrations (column 1, lines 16-26, column 3, lines 8-38, column 4, lines 55-67.” Office Action, page 7. Applicants disagree, and point out first that the three passages cited by the Examiner are not about a single “system,” as the Examiner alleges. The first passage cited is part of a “Description of the Prior Art.” Mui, column 1, line 15. The second passage appears to discuss mathematical treatments without reference to any figure. The third passage appears to discuss a phase measurement system: “The phase measurement system in accordance with the present invention may be implemented by...” Mui, column 4, lines 55-56. Second, Applicants point out that these passages, alone or in combination, do not describe “a decoder for processing data from the detector to process phase effects induced by the optics to form a final image that is substantially clear of the focus-related aberrations.” Thus, unlike claim 1, there is no “decoder,”

there is no “processing,” there is no “data from the detector” and there is no “final image.”

Applicants also point out that the Examiner has cited no motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, for modifying Lisson with the teachings of Mui. Indeed, the systems of Lisson and Mui solve different problems, and with different means. No reasonable motivation therefore exists to modify Lisson with the teachings of Mui.

Since motivation is lacking, and since the elements of claim 1 are not found in the cited references, a prima facie case of obviousness does not exist; Applicants therefore request reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. §103(a) as unpatentable over Lisson in view of Mui.

We do not understand Examiner’s statement that “It would have been obvious to one of ordinary skill... to modify Lisson by the teaching of Mui in order to maximize the beam delivery to the laser onto a target for compensating phase distortion by turbulence (as suggested by Mui at column 5, lines 46-52).” Office Action, pages 7-8. The Examiner appears to argue features not found in claim 1 or in any other claim. Applicants request clarification as to the bearing of this statement on the claim rejections under 35 U.S.C. §103(a). We further request proof of how one skilled in the art would find this obvious. MPEP §2144.

Claims 2-14 depend directly or indirectly from claim 1, and benefit from like arguments. However these claims have additional reasons for patentability. For example, claim 3 requires that “the wavefront coding mask being configured to account for focus-related aberrations defined by Zernike polynomials.” The Examiner contends that “Lisson discloses... [reciting Applicant’s claim 2] (column 2, lines 9-13, column 8, lines 39-43).” Office Action, page 8. Applicants point out that these passages of Lisson bear no resemblance to the claim 3 elements except that they contain the word “Zernike.” These passages read: “(1) one may first mathematically interrogate the global OPD error function for its root mean square (RMS), or variance, or standard deviation, or Zernike polynomial curve fit, or peak to valley absolute difference, etc; to an end secondly, (2) of ascertaining the type and the magnitude of an imaging device defect...” Lisson, column 2, lines 9-15. “The local performance contribution for the example (pure Zernike spherical) is well known and

thus allows assessment of LWPA accuracy. A strip format was selected for ease of presentation, but the results are directly extendable to the complete pupil.” Lisson, column 8, lines 39-43. These passages describe elements that have nothing to do with a “wavefront coding mask being configured to account for focus-related aberrations defined by Zernike polynomials.”

Claim 5 recites “the wavefront coding mask being integrated with the optical elements.” The Examiner contends that “Lisson discloses... [reciting Applicant’s claim 5] (column 3, line 13 through 28).” Office Action, page 8. Applicants do not reproduce this lengthy passage here, but point out that this passage has nothing to do with “the wavefront coding mask being integrated” – there is nothing in the passage that is, or suggests, a “wavefront coding mask” or anything that is “integrated.”

Similarly, claim 6 recites “the wavefront coding mask being integrated with one or more surfaces of the optical elements.” The Examiner contends that “Lisson discloses... [reciting Applicant’s claim 6] (column 1, lines 34-49).” Office Action, page 8. Once again, the Examiner has cited a lengthy passage that has no bearing on the claim at issue: there is nothing that is, or suggests, a “wavefront coding mask” or anything that is “integrated with one or more surfaces.”

Claim 7 recites “the optical elements comprising adaptive optics” and claim 8 recites “the adaptive optics comprising the wavefront coding mask.” Again, the Examiner contends that “Lisson discloses [reciting Applicant’s claims 7 and 8] (column 12, line 55 through column 13, lines 13) [and] (column 13, lines 1-58) [respectively].” Office Action, page 8. Once again, the Examiner has cited lengthy passages that have no bearing on the claim at issue: there is nothing that is, or suggests, a “wavefront coding mask” in these passages. Therefore, as in claim 7, there are no “optical elements” (defined in claim 1 as “optics, including a wavefront coded mask”) “comprising adaptive optics” in these passages. And, as in claim 8, there are no “adaptive optics comprising the wavefront coding mask” in these passages.

Furthermore, within these passages Lisson clearly uses adaptive optics to correct aberrations of a test optic: “With respect to the FIG. 9 active control system 48, note that the image quality of the test optic 42 can be directly improved on the basis of local performance assessment. For example, the number of force and/or

displacement actuators can... be optimally determined, and optimally positioned...” Lisson, col. 13, lines 3-9. However, claim 1, and thus claims 7 and 8, recite “optics, including a wavefront coded mask, for ... modifying phase of the wavefront such that an optical transfer function of the optical imaging system [is] substantially invariant to the focus-related aberrations induced, over time, by the intervening medium” (e.g., a medium as described in specification paragraphs [0002] and [0003]). Correcting known or measured aberrations of a “test optic” is not the same as claim 7.

Claim 9 recites “the aberrations comprising one of piston error, quilting error and stuck actuator error.” The Examiner contends that “Lisson discloses... [reciting Applicant’s claim 9] (column 1, lines 53-66).” Office Action, page 8. Although the Examiner has cited a different passage than the one discussed above with respect to claim 24, this passage of Lisson also does not disclose - in any way – aberrations comprising one of “piston error, quilting error and stuck actuator error.”

The following claims are also rejected by citations that, we contend, have no teaching or suggestion of the features (for example as underlined below) recited of the claims:

Claim 10, reciting “wherein the wavefront coded structure is positioned at one or more of a principal plane of the imaging system, an image of a principal plane of the imaging system, an aperture stop of the imaging system, and an image of the aperture stop.”

Claim 11, reciting “wherein the intermediate image defines a modulation transfer function that has no zeros for detected spatial frequencies of the detector”

Claim 12, reciting “the decoder operable to restore each detected frequency of the wavefront in the final image”

Claim 13, requiring “the decoder being space variant to control aberrations comprising coma”

Each of the cited passages provided by the Examiner has been searched thoroughly; the elements “wavefront coded structure,” “principal plane,” “aperture stop,” “intermediate image,” “zeroes,” “detected spatial frequencies of the detector,” “detected frequency of the wavefront,” “final image” and “decoder being space

variant,” and “aberrations comprising coma,” and anything similar thereto, are entirely absent from the cited passages.

Note that claim 14 recites “the decoder being dynamic to continually produce the final image while the aberrations vary, over time.” The Examiner contends that Mui discloses such a system, but provides no citation within Mui where such a system is found. Applicants disagree, and contend that Mui contains no such disclosure.

As discussed above with respect to claim 1, Applicants also contend that the Examiner cites no motivation, either in the cited art or in the knowledge generally available to one of ordinary skill in the art, for modifying Lisson with the teachings of Mui. Applicants contend that no such motivation exists.

Thus, (a) claim 1, from which claims 2-14 depend, is not obvious, as argued above; (b) motivation to combine the teachings of Lisson and Mui as suggested by the examiner is lacking, and (c) the elements of claims 2-14 are not found in Lisson and Mui, alone or in indiscriminate combination. For each of these reasons, Applicants contend that prima facie obviousness does not exist, and request reconsideration and withdrawal of the rejection of claims 2-14 under 35 U.S.C. §103(a) as unpatentable over Lisson in view of Mui.

Claim 16 is rejected on the same grounds as claim 1: “see the above rejection of claim 1.” Office Action, page 9. Applicants refer to the above discussion of claim 1, showing that none of the elements “intermediate image,” “optical transfer function at an intermediate image is substantially invariant to focus related aberrations induced by the medium over time,” “decoding data representative of the intermediate image,” “final image” and “effects induced by the step of modifying to form a final image” are found in Lisson and/or Mui. Furthermore, the Examiner cites no motivation for modifying Lisson with the teachings of Mui. Applicants contend that no such motivation exists. Since not only is motivation lacking, but the elements themselves of claim 16 are not found in the cited references, a prima facie case of obviousness does not exist; Applicants request reconsideration and withdrawal of the rejection of claim 16 under 35 U.S.C. §103(a) as unpatentable over Lisson in view of Mui.

Claims 17 and 18 depend from claim 16 and benefit from like arguments. Moreover, claim 17 requires “the step of modifying comprises the step of modifying

according to Zernike polynomials which characterize the focus-related aberrations.” The Examiner rejects claim 17 on the same grounds of rejection as claim 3: “As to claims 3 and 17...” Office Action, page 8. Applicants disagree and point to the above discussion of claim 3, showing the only resemblance between the Examiner’s citation within Lisson and the claim 17 requirement to be use of the word “Zernike.”

Claim 18 is not listed as rejected under 35 U.S.C. §103(a). “Claims 1-14 and 16 – 17 are rejected under 35 U.S.C. §103(a) as unpatentable...” Office Action, page 6. However, claim 18 is included in the list of rejected claims on the Office Action Summary, and is discussed on page 9, so Applicants reply herewith to a 35 U.S.C. §103(a) rejection that may have been intended by the Examiner. Claim 18 requires “the medium comprising air, the method being employed within lithography.” The Examiner contends “Mui discloses... [reciting Applicant’s claim 18] (column 5, lines 53-67).” Office Action, page 9. Again, the Examiner has cited a lengthy passage with no bearing on the claim at issue – for example, even the words “air” and “lithography” are absent. Furthermore, in each of claims 17 and 18, the Examiner cites no motivation for modifying Lisson with the teachings of Mui. Applicants contend that no such motivation exists. Since not only is motivation lacking, but the elements themselves of claims 17 and 18 are not found in the cited references, a prima facie case of obviousness does not exist; Applicants request reconsideration and withdrawal of the rejection of claims 17 and 18 under 35 U.S.C. §103(a) as unpatentable over Lisson in view of Mui.

Claims 22-23 stand rejected under 35 U.S.C. §103(a) as unpatentable over Galburt in view of Duncan. Applicants respectfully disagree. First, claim 22 depends from claim 20, and benefits from like arguments as presented above. Second, claim 22 recites “the optics comprising a wavefront coded mask for modifying phase of a wavefront imaged to the detector, and further comprising a post processor for further reducing distortion effects introduced by the reflections.” The Examiner contends that “Regarding claim 22, Galburt discloses on-axis mask and wafer alignment system.” Office Action, page 9. The Examiner appears to be arguing a feature not found in claim 22 (or in any other claim); Applicants request clarification as to the bearing of this statement on the rejection of claim 22. The Examiner concedes “Galburt is silent about a wavefront coded mask for modifying phase of a wavefront imaged to the detector, and further comprising a postprocessor for further reducing

distortion effects introduced” and goes on to say “Duncan discloses wavefront sensor for a staring imager. the system comprises of: ... [reciting Applicant’s claim 22] (abstract, column 2, lines 9- 55, column 4, lines 16- 37).” Again, a “wavefront sensor for a staring imager” is a feature not found in claim 22 or any other claim; Applicants request clarification as to the bearing of this statement on the rejection of claim 22. Applicants disagree with the Examiner’s contention that the recited elements of claim 22 are found within the cited passage of Duncan, and point out that the elements “wavefront coded mask,” “modifying phase,” “a post processor” and “distortion effects introduced by the reflections,” and/or anything resembling these elements, are entirely absent in the lengthy cited passages.

The Examiner goes on to state “it would have been obvious to one of ordinary skill in the art... to have modified Galburt to include a wavefront coded mask... [reciting claim 22].” Applicants respectfully disagree, and point out first, that the Examiner has already conceded that Galburt is silent as to all elements of claim 22; second, that several elements required by claim 22 are lacking entirely in Duncan, as noted above; and third, that the Examiner has cited no motivation for combining the teachings of Galburt and Duncan. Again, we must ask for proof to back the Examiner's statement. MPEP §2144. Since motivation lacking, and since the elements themselves of claim 22 are not found in the cited references, a prima facie case of obviousness does not exist; Applicants therefore request reconsideration and withdrawal of the rejection of claim 22 under 35 U.S.C. §103(a) as unpatentable over Galburt in view of Duncan.

We do not understand Examiner’s statement that “It would have been obvious to one of ordinary skill... to have modified Galburt by the teaching of Duncan in order to archive the focused and defocused image data for image post processing or evaluate the data in real time to compensate the optical system to correct wavefront aberrations (as suggested by Duncan at column 5, lines 46- 52.)” Office Action, page 10. The Examiner appears to be arguing features not found in claim 22; Applicants request clarification as to the bearing of this statement on the rejection of claim 22 under 35 U.S.C. §103(a). We further must ask, again, for proof that supports the Examiner's allegation regarding one skilled in the art. MPEP §2144.

Claim 23 also depends from claim 20 and benefits from like arguments; claim 23 also recites “wherein the optics are constructed and arranged for coding the wavefront such that an optical transfer function of the imaging system is modified to be substantially invariant to focus-related aberrations, the post processor being configured to remove effects induced by the wavefront coded mask on the wavefront.” The Examiner contends that “Duncan discloses the imaging system wherein the optics are constructed and arranged for coding the wavefront such that an optical transfer function of the imaging system is modified to be substantially invariant to focus-related (column 4, lines 16- 52), aberrations, the postprocessor being configured to remove effects induced by the wavefront coded mask on the wavefront (column 4, lines 16-52).” Office Action, page 10. Applicants disagree, and point out that the cited passage fails to disclose “optics... constructed and arranged for coding the wavefront,” “an optical transfer function... substantially invariant to focus-related aberrations,” a “post processor” or “effects induced by the wavefront coded mask.” Furthermore, the Examiner does not note any connection between Galburt and the elements of claim 23 (as suggested by Examiner’s rejection of claim 23 as unpatentable over Galburt in view of Duncan). The Examiner cites no motivation to combine references; Applicants contend that no such motivation exists. Since not only is motivation lacking, but the elements themselves of claim 23 are not found in the cited references, a prima facie case of obviousness does not exist; Applicants therefore request reconsideration and withdrawal of the rejection of claim 23 under 35 U.S.C. §103(a) as unpatentable over Galburt in view of Duncan.

Claims 32-34 stand rejected under 35 U.S.C. §103(a) as unpatentable over Lisson in view of Mui. Applicants respectfully disagree.

Claim 32 depends from claim 31, and benefits from the arguments presented above with respect to claim 31. Claim 32 further requires “a decoder, connected with the detector, for implementing the task based image processing.” The Examiner contends: “Lisson discloses a method for providing feedback correction for an image device.” Office Action, page 11. The Examiner appears to argue a feature not found in claim 32; Applicants request clarification as to the bearing of this statement on the rejection of claim 32. The Examiner concedes: “Lisson is silent about a decoder, connected with the detector, for implementing the task based image processing.” The Examiner goes on to say, “Mui discloses optical phase front measurement unit.”

Office Action, page 11. Again, the Examiner appears to be arguing a feature not found in claim 32; Applicants request clarification as to the bearing of this statement on the rejection of claim 32. The Examiner contends: “The system comprises of: a decoder connected with the detector (column 1, lines 16-26, column 4, lines 47-54, column 3, lines 8-38, column 4, lines 55-67)...” Office Action, page 11. Applicants disagree; having thoroughly searched these lengthy citations, Applicants do not find the element of a “decoder.” The Examiner goes on: “... for implementing the task based image processing (column 1, lines 16-26, column 4, lines 47-54, column 3, lines 8-38, column 4, lines 55-67).” Office Action, page 11. Applicants disagree; having thoroughly searched the same citations, Applicants do not find the element of “task based image processing,” (or any form of “image processing”). The Examiner goes on: “Therefore, it would have been obvious... to have modified Lisson to include a decoder... [reciting Applicant’s claim 32].” Applicants disagree: first, Lisson does not contain the elements of claim 31, as discussed above; second, Mui does not have “a decoder.” The Examiner cites no motivation to combine references; Applicants contend that no such motivation exists. Since not only is motivation lacking, but the elements of claim 32 are not found in the cited references; a prima facie case of obviousness therefore does not exist; Applicants request reconsideration and withdrawal of the rejection of claim 32 under 35 U.S.C. §103(a) as unpatentable over Lisson in view of Mui.

The Examiner makes a further statement: “It would have been obvious... to modify Lisson by the teaching of Mui in order to maximize the beam delivery of the laser onto a target for compensating phase distortion by turbulence (as suggested by Mui at column 5, lines 46- 52).” Office Action, page 11. The Examiner again appears to argue features not found in claim 32 or in any other claim. Applicants request clarification as to the bearing of this statement on the rejection of claim 32, or any other claim, under 35 U.S.C. §103(a).

Claim 33 depends from claim 32, and benefits from like arguments. Further, claim 33 recites “the decoder operable as an all-pass filter in the frequency domain.” The examiner contends: “Mui discloses the system of the decoder operable as an all-pass filter (column 5, lines 43-45) in the frequency domain (column 2, lines 6-32).” Applicants disagree. The first passage cited says nothing about a decoder or an all-pass filter: “In order to increase the image quality, a laser line interference filter 52

may be utilized to attenuate background noise.” Mui, column 5, lines 43-45. Mui’s “laser line interference filter 52” can be seen clearly in FIG. 3 of Mui as an optical filter acting on light, not an “all-pass filter in the frequency domain.” Similarly, the second passage cited says nothing at all about “the frequency domain.” Applicants also note that the Examiner has cited no motivation to combine references, and contend that no such motivation exists. Since not only is motivation lacking, but the elements themselves of claim 33 are not found in the cited references, a prima facie case of obviousness does not exist; Applicants request reconsideration and withdrawal of the rejection of claim 33 under 35 U.S.C. §103(a) as unpatentable over Lisson in view of Mui.

Claim 34 also depends from claim 32, and benefits from like arguments. Further, claim 34 recites “the decoder operable as an attenuation filter in the frequency domain for magnifications of one or less.” The examiner contends “Mui discloses the system of the decoder... [reciting Applicant’s claim 34] (column 2, lines 6-32, column 5, lines 43-45).” Applicants disagree, and point out that neither of the cited passages says anything about “an attenuation filter in the frequency domain” or “magnifications of one or less.” Applicants also note that the Examiner has cited no motivation to combine references, and contend that no such motivation exists. Since not only is motivation lacking, but the elements themselves of claim 34 are not found in the cited references, a prima facie case of obviousness does not exist; Applicants request reconsideration and withdrawal of the rejection of claim 34 under 35 U.S.C. §103(a) as unpatentable over Lisson in view of Mui.

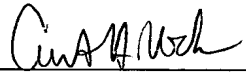
In view of the above Amendments and Remarks, Applicants have addressed all issues raised in the Office Action dated 25 August 2004, and respectfully solicit a Notice of Allowance. Should any issues remain, the Examiner is encouraged to telephone the undersigned attorney.

The \$151 fee for two new independent claims and five new dependent claims is submitted herewith. Applicants believe no other fees are currently due, however, if any fee is deemed necessary in connection with this Amendment and Response, please charge Deposit Account No. 12-0600.

Respectfully submitted,

LATHROP & GAGE L.C.

Date: 23-Nov-2003

By: 

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